



EUROPEAN | PARIS
CONFERENCE OF | 26-29 MARCH
TROPICAL ECOLOGY | 2018

ANNUAL MEETING OF THE SOCIETY FOR TROPICAL ECOLOGY (GTÖ)



**CHALLENGES IN
TROPICAL ECOLOGY AND CONSERVATION -
GLOBAL PERSPECTIVES**





EUROPEAN | PARIS CONFERENCE OF 26-29 MARCH **TROPICAL ECOLOGY** | 2018

ANNUAL MEETING OF THE SOCIETY FOR TROPICAL ECOLOGY (GTÖ)



IMPRINT

Editors

Pierre-Michel Forget – Muséum National d'Histoire Naturelle

Catherine Reeb – Sorbonne Université

Jérémy Migliore – Université Libre de Bruxelles

Heike Kuhlmann – KCS Kuhlmann Convention Service

Concept, Layout and Cover

roman.tschirf@gmail.com

This book is available at www.gtoe.de

ISBN: 978-3-00-059300-0

The respective authors are solely responsible for the contents
of their contributions in this book.

Printed on 100% recycled paper



ECOLOGICAL GENOMICS OF NICHE EXPLOITATION AND INDIVIDUAL PERFORMANCE IN TROPICAL FOREST TREES

Sylvain Schmitt¹, Myriam Heuertz², Bruno Hérault^{3,4}, Niklas Tysklind⁵

¹UMR Biodiversité Gènes et Communautés, Université de Bordeaux, Cestas, FR,
sylvain.schmitt@agroparistech.fr

²UMR Biodiversité Gènes et Communautés, Institut National de la Recherche Agronomique (INRA),
Cestas, FR

³Institut National Polytechnique Félix Houphouët-Boigny, Yamoussoukro, CI

⁴UR Forêts et Société, Centre de coopération Internationale en Recherche Agronomique pour le
Développement (CIRAD), Montpellier, FR

⁵UMR Écologie des Forêts de Guyane, Institut National de la Recherche Agronomique (INRA), Kourou,
FR

Understanding characteristics, causes and consequences of biodiversity is a fundamental challenge in ecology and evolution. Biodiversity presents three nested levels, from individuals, over species, to ecosystems.

Intraspecific variability affects the individual level of biodiversity. High levels of intraspecific variability, notably in ecologically important traits has been reported. Intraspecific variability is shaped by the interaction between (1) genetic variability, (2) environmental heterogeneity and (3) stochastic factors.

However, we still know little about the effects of this variability on population dynamics, species interactions and ecosystem processes. Interestingly though, variability at the level of genotypes and traits has been suggested to promote local adaptation of populations and to promote species coexistence at the community level, thus suggesting a role for this variability in the origin and maintenance of biodiversity.

We here present the conceptual framework of the recently started PhD thesis of S. Schmitt. The main objective of the thesis is to further explore the genotype-environment interactions in shaping the intraspecific trait variability of biodiversity. The study site for the thesis is the lowland rainforest in the research station of Paracou, French Guiana, where detailed inventory and tree growth data, as well as environmental characterization are available. We specifically wish to consider the intraspecific genomic variability as a continuum within structured populations of closely related species, and measure its role on individual tree performance through growth over time, while accounting for effects of a finely-characterized environment at the abiotic and biotic level. Eventually, we expect to help building a theory of community ecology starting with individuals, because interactions with environment is based at the individual level.

